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Paul E. Skelley

*Florida State Collection of Arthropods, Florida Department of Agriculture and Consumer Services,
Gainesville, FL*

Robert D. Gordon

Smithsonian Research Associate

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A new species of *Aphodius* (Coleoptera: Scarabaeidae) from Alabama pocket gopher burrows

Paul E. Skelley

Florida State Collection of Arthropods
Florida Department of Agriculture and Consumer Services
P.O. Box 147100
Gainesville, FL 32614-7100

Robert D. Gordon

Smithsonian Research Associate
P.O. Box 65, Willow City
North Dakota 58384

Abstract: *Aphodius alabama*, new species, collected in burrows of the southeastern pocket gopher *Geomys pinetis* Rafinesque, is described. *Aphodius dyspistus* Skelley & Woodruff, *A. hubbelli* S. & W., *A. platypleurus* S. & W., and *A. tanytarsus* S. & W., collected with *A. alabama*, are all recorded from southeastern Alabama.

Introduction

The southeastern pocket gopher (*Geomys pinetis* Rafinesque) is found in the northern half of Florida, and the southern halves of Georgia and Alabama (Williams & Genoways 1980). The invertebrate denizens of these burrows in Florida have been the subjects of a few studies, including Hubbell & Goff (1939) and Skelley & Woodruff (1991). Recent survey work by R. H. Turnbow, Jr., M. C. Thomas, and P. E. Skelley, on these rodent burrows at Fort Rucker, Alabama, produced a new species of *Aphodius* (described below), along with four other species: *Aphodius dyspistus* Skelley & Woodruff, *A. hubbelli* Skelley & Woodruff, *A. platypleurus* Skelley & Woodruff, and *A. tanytarsus* Skelley & Woodruff. This is the first record for these species from Alabama.

The new species is described here to make the name available for current research and a revisionary study on the *Aphodius* of the United States currently in progress.

Aphodius alabama, new species

Description: Male, length 5.9 mm, width 2.7 mm. Body robust, broad, somewhat flattened dorsoventrally, widest across pronotum. Color mostly reddish brown except broad lateral portions of head and pronotum paler reddish brown; meso- and metafemur reddish yellow. Head short, slightly convex; surface alutaceous, feebly shiny, with fine

barely perceptible punctures. Clypeal apex feebly emarginate medially with broadly rounded anterior angle; surface slightly granulate. Gena nearly obsolete, fimbriate. Pronotum (Fig. 1) convex, extremely broad, wider than base of elytra; lateral margin nearly straight medially, broadly rounded at anterior and posterior angles, without groove or depressions; base strongly completely margined; surface alutaceous and feebly shiny, with few coarse erratically scattered punctures, with anteromedian portion of disc impunctate. Elytron alutaceous and feebly shiny; stria fine, stria punctures small, separated by less than their own diameters; intervals slightly convex, impunctate. Mesosternum shiny, flat between coxae. Metasternum shiny, with coarse scattered punctures laterally and fine punctures medially. Abdominal segments shiny with setiferous punctures separated by no more than twice their own diameters. Protibia with apical spur large, long, slightly curved down, length equal to length of basal 2.5 tarsomeres. Profemur with ventral surface densely granulate, densely pubescent; posterior surface with scattered punctures. Mesotibia with apical setal fringe composed of alternate long and short setae, long setae slightly longer than inferior mesotibial spur. Inferior mesotibial spur less than 0.5 x length of superior spur, slender, apically truncate, slightly curved inward. Mesofemur with sparse punctures each bearing a long seta on posterior 1/4 from base to apex. Meso- and metatrochanter each with approximately 9

moderately long setae. Metafemur with patch of approximately 12 moderately long setae near trochanter. Metatibia not apically flattened; metatibial apical fringe with long setae $0.66 \times$ length of inferior spur; metatibial spurs nearly equal in length, inferior spur slightly shorter, superior spur $0.75 \times$ length of tarsomere I. Protarsomeres I-IV subequal in length, protarsomere V slightly shorter than protarsomeres II-IV combined. Meso- and metatarsomere I as long as II-IV combined; mesotarsomere V slightly longer than III and IV combined; metatarsomere V slightly shorter than III and IV combined; meso- and metatarsal claws $0.75 \times$ length of tarsomere V. Genitalia with paramere apically oblique, with apical membranous appendage (Fig.2).

Female: Similar to male except protibial spur short, slender; inferior mesotibial spur straight, apically acute; patches of setae on trochanter, femur, and tibia lacking.

Variation: Length 5.5 to 6.7 mm, width 2.6 to 3.0 mm. Head with clypeus apparently smooth or with granulate area distinctly visible. Pronotal punctures vary greatly in number and spacing, and may be present in small numbers on anteromedian area of disc; lateral margin of pronotum often with faint indications of anterior and posterior depressions.

Type material: Holotype male "Alabama, Dale Co., Fort Rucker Mil. Res. 12-II-1995, Skelley, Thomas & Turnbow, *Geomys* dung chamber" (FSCA). Allotype female with same data except "...29 Jan. 1993, M. C. Thomas, *Geomys* nest/dung chamber" (FSCA). Paratypes (90): 24 with same data as holotype; 9 with "Alabama, Dale Co., Ft. Rucker, N. of Hanchey Army Heliport, 7-II-1992, R. H. Turnbow, M. C. Thomas, & P. E. Skelley, *Geomys* dung chamber"; 3 with same data except "7-9-II-1992.... *Geomys* burrow pitfall"; 38 with same data as allotype except with M. Thomas, R. Turnbow, or P. Skelley as collector; 3 with same data as holotype except "10-11-II-1992, R. Turnbow, *Geomys* burrow pitfall"; 13 with same data as holotype except "25-I-1994, R. Turnbow, *Geomys* burrow pitfall".

Paratypes are deposited in the following private and institutional collections: P. Bordat, Verrieres le Bisson, France; J. L. Carr, Calgary, Canada; B. D. Gill, Agriculture Canada, Ottawa, Canada; H. Howden, Carleton University, Ottawa, Canada; P. W. Lago, University of Mississippi, University, MS; E. G. Riley and W. Godwin, Texas A. & M. Univer-

sity, College Station, TX; J. Saulnier, Yucaipa, CA; P. E. Skelley, Gainesville, FL; R. H. Turnbow, Enterprise, AL; United States National Museum, Washington, DC; W. B. Warner, Chandler, AZ; R. E. Woodruff, Florida State Collection of Arthropods (FSCA), Gainesville, FL.

Remarks: *Aphodius alabama* is a member of the subgenus "*Platyderides*" as defined by Brown (1928). It is a member of the group of species centering around *A. iowensis* Wickham and *A. brevicollis* LeConte because of the mostly smooth head, strongly defined basal pronotal line, and lack of lateral pronotal depressions. It keys to *A. laevigatus* Haldeman in Gordon's (1983) key to eastern species of *Aphodius* but *A. laevigatus* does not have a laterally expanded pronotum. It is by far the southernmost species in the *brevicollis* group and the most morphologically divergent.

Etymology: This species is named after the Alabama Indians for whom the state was named (noun in apposition).

Habitat and Collecting. Fort Rucker is located on rolling hills with some sandy upland soils. Natural areas are generally covered by mixed hardwood forests, some pines, with an occasional area of open grassy-woodlands. The military base is dotted with cleared airfields and plots used to grow crops for wildlife. Pocket gophers (*Geomys pinetus* Rafinesque) were found in the maintained fields or open woodlands.

The burrows were sampled by both excavation and pitfall trapping. Complete excavations exposed the nest and dung chambers where many of the specimens were found. Excavation required digging trenches, following the burrow to the nest and dung chambers. These excavations were sometimes several hundred feet long before the chambers were located. Chamber material with some surrounding sand was placed in buckets and later sorted by hand.

Placing pitfall traps in opened burrows allowed us to sample the burrow systems with much less effort. Before pitfall traps could be placed in the burrows, the rodents were trapped and relocated. Pitfall traps baited with swine dung were placed in the opened burrows, the hole covered with a board and sand, then checked after a couple of days. This technique is discussed by Hubbell & Goff (1939) and Skelley & Woodruff (1991).

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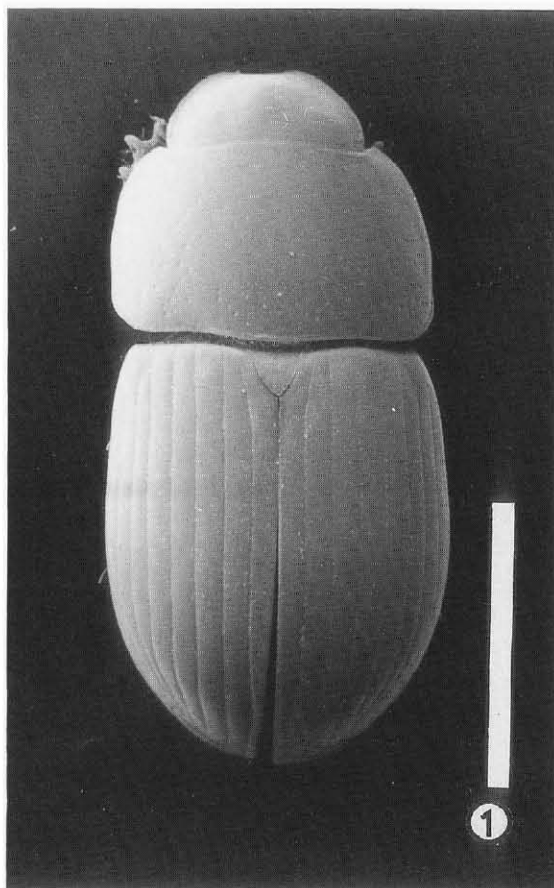


Fig. 1. Dorsal habitus of *A. alabama*, n. sp., line = 2.3 mm.

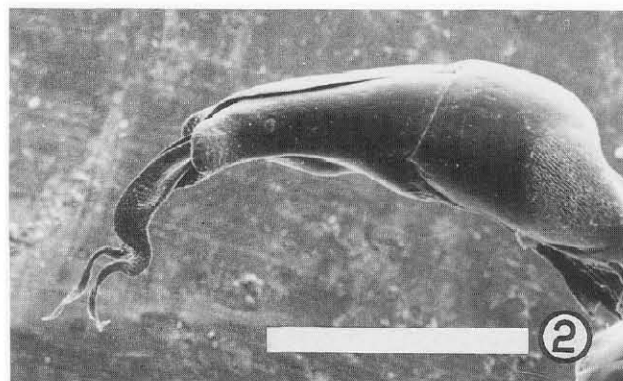


Fig. 2. Male genitalia of *A. alabama*, n. sp., line = 0.5 mm.

